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ABSTRACT

In order to assist the accountability demands of current educational policy, this report recommends the employment of a cognitive style mapping inventory to determine what each individual may achieve in learning skills. It is indicated that when students were permitted to study in ways compatible with their recognized cognitive styles, achievement invariably increased. Cognitive style mapping, according to this report, suggests that learning is affected by one's perception of: (1) symbols and their meanings; (2) the individual, family, and associates: and (3) the modalities of inference or reasoning methods one employs. Tables delineating a pilot study that employed the Hill Cognitive Style Mapping Inventory are included. (Author/WP)

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Cognitive Style Mapping: A Prescription for Accountability

by

Bernard Boozer and Audrey Anderson

(The authors believe the cognitive processes an individual student employs is perhaps the most important factor in his academic achievement. The Hill Cognitive Style Mapping Inventory may help educators prepare for the accountability demands of school boards, parents, legislators and civil authorities.)

In recent months a great deal of attention has been given to those students who annually receive their high school diplomas and enter the job market only to find that the diploma (12 years of invested time and energy) does not provide the ability to secure and maintain meaningful employment. As a result, these recent graduates face an almost certain future of under-employment, unemployment, public assistance, and in some instances, a life of crime.

These conditions are much more evident than ever before because of economic inflation, over education and many other reasons which causes a rather apathetic voting citizen, whose only civic responsibility was participation in the local PTA, to change to a concerned citizen, parent, and/or legislator who demands that the educational system and its proponents be accountable for its low-achieving students. Examples of these instances are seen with exhaustive local, state and federal assistance cuts for education.

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In recent months educators have been concerned with accountability laws that would link improved student performance to increased funding to schools. Accountability has always been with us as evidenced by institutions having highly selective admissions standards which placed the burden of proof on the individual student to demonstrate that college level work was in his/her realm of competency.

An example of a large university's disenchantment with high school graduation standards comes from one of the largest public university in the country, City University of New York (CUNY). The University's "open admissions" policy allows admission to all city applicants that have been awarded a high school diploma. The Chancellor, Robert J. Kibbee, suggests that entering freshmen should be required to demonstrate what their diploma purportedly reports: that they are able to converse, read and use mathematics at the 8th grade level.

The decline in academic performance in today's schools is evidenced by the drop in standardized test scores, which, according to former Secretary of Labor, Willard Wirtz, began as early as 1963 and accelerated sharply in the 1970s. The "sizzling sixties" was characterized by increased television watching, more one-parent families and political upheaval. These factors formed a "decade of distraction" which could probably account for the persistent decline in the aptitude test scores of high school seniors in the 1970's as evidenced by the College Entrance Examination

Board. Colleges and universities relaxed entrance requirements and curricula requirements during the "sizzling sixties" in an attempt to pacify reactionary, disruptive students. These same administrators now find it necessary, but very difficult, to return to the traditional curricula offered. The "return to the basics" is an attempt to apply remedial and compensatory methods for the deficient student, who in a few short years, will be entering the professional job market. The proposal submitted to the Board of Higher Education by Chancellor Kibbee which received majority support, that freshmen be required to demonstrate that they are able to read and do mathematics at the 8th grade level, was the result of a University study that approximately 15% of the entering freshmen classes did not have the necessary skills for undergraduate study without some remedial or compensatory assistance.

On a broader front, the consumer rights movement in education appears to be moving from the PTA room to the courtroom. One widely publicized suit was filed in California by a high school graduate with a normal IQ who could read only at a fifth grade level. The fact that a U.S. District Court ruled against the plaintiff last summer only postpones the decision by a higher court. In a New York decision, the school district's failure to teach a "teachable child" resulted in an award that amounted to a private school tuition.

More recently, litigation to establish a student's right to

an education has been broadened by a suit in New Jersey on behalf of a 20 year old man with dyslexia. Thomas McNeil, an unemployed high school graduate, filed suit against the South Orange High School - Maplewood School Board in Essex County - its physicians, psychologists and other non-school professionals, for unspecified damages because of a loss of his earning capacity. Despite a primary grade reading level, McNeil was promoted year after year and eventually granted a high school diploma. His contention was that the defendants should have been able to diagnose his reading problem and treat it and that as a result of their ineptness, he has been condemned to pursuing demeaning, low paying jobs even though he has above average intelligence. McNeil's suit is based on a special education law in New Jersey, the Beadleston Act, which requires school boards to examine students with learning problems and to provide programs necessary to afford them the "equal educational opportunities" provided to other students. A similar law in New York State requires the diagnoses of students with special educational requirements and handicaps and submission of an annual report on the breadth and results of the educational services provided to those students. In fact, legislative concern has become so visible in this area that William Southwork makes this prediction: "Unless teachers establish criteria for measuring student learning, the legislators will."

Another recent case involves a 21 year old Seattle man who filed suit in Kings County Superior Court seeking unspecified

damages on the grounds he was graduated from high school without learning to read. The plaintiff's father claims his son cannot read an application to get a job and that he has been rejected by the Army, Navy, and the Air Force on the basis of illiteracy.

With both the judiciary and legislative sectors supporting efforts to obtain redress whenever students do not achieve on an academic level deemed to be "average," "normal," or "on grade level," educators should reassess expectations for children of a given age. If all 9 year olds should be expected to achieve reading and mathematics scores equivalent to those of most children in grades 3-5, those youngsters who do not score "within a relative grade level range" have not been appropriately diagnosed and prescribed for, according to the Beadleston Act. The burden of demonstrating that diagnostic procedures have been employed and that the results of the diagnosis have been translated into complimentary instructional strategies rests upon the school districts, its physicians and psychologists, and predictably within a short time, upon its teachers. Teachers, therefore, would need to admit publicly that each child is not like every other child and that some can be expected to achieve more and/or faster than their peers.

Recognizing the principle of individual differences makes educators aware they will be called upon increasingly to justify the evidence used in making such decisions as to how they have tracked a child, why they have passed or failed a student and on what grounds they have certified a teacher. Diagnostic procedures then will aid in assessing student potential based on whatever

criteria are established: baseline achievement data, comparative socio-economic status, IQ scores, motivation assessments or personality profile. The problem is complicated by several unfortunate realities. The content of teacher education usually includes very little in the way of diagnostic procedures. It does rely essentially on traditional techniques that include the administration of standardized achievement tests, or IQ tests, which reveal where the child is academically or what the child should "be capable of achieving," not why he has not advanced further. Students who fail to achieve within a grade level range are subjected to a battery of examinations that tend to reveal their perceptual strengths and/or weaknesses. When no perceptual malfunction is evidenced, youngsters are assumed to have emotional or psychological problems that prevent their learning.

In preparing for the inevitable conflicts that point an accusatory finger at todays teacher, we should now begin to examine a basic definition. Accountability, according to William Stradley (1973) is the teacher's gaining results from the students that are of benefit to the learner and are in accord with the value structure of society. Stradley adds there is more lay involvement in the definition of accountability, for in the final analysis, it is the public that determines the extent of accountability.

One of the safeguarding agents to insure maximum utilization of all the students' processes is what researchers, authors and teachers refer to as "cognitive styles" of the way students learn.

This is a phenomenon that varies among individuals and is identifiable and utilizes the exploitation of student weaknesses and the capitalization of student strengths. Research has shown that where students were permitted to study in ways that were compatible with their identified and recognized cognitive styles, achievement invariably increased.

The manner in which a student learns is probably the most important factor in his cognitive process. There have been relatively few instruments constructed that purport to measure those elements that reflect a process rather than a prediction.

In this era when public pressure has increased the need for educational accountability and legislators and the courts seek to enforce accountability, it is now more important than ever that educators begin to evaluate available tools. If use of these diagnostic tools does nothing else it will offer a measure of protection against legal action or further to determine how each individual may achieve.

The cognitive style mapping inventory is based on research data that yields 27 categories which suggests that learning is affected by one's perception of (1) symbols and their meanings; (2) the individual, family and associates, and; (3) modalities of inference or reasoning methods one employs.

In June of 1977, 110 students and 5 teachers participated in a pilot study to determine if similar cognitive styles of teachers and students resulted in higher achievement. The subjects were

from a medium-sized state college in a large state university in New York State. The subject areas represented were upper division classes consisting of one physical education class, two health science courses, one accounting course and one business law course.

The Hill Cognitive Style Mapping Inventory was administered simultaneously to the teachers and students with the subjects written responses then processed by computer. The print out revealed matches and mis-matches between teachers and students in 10 of the 27 categories (only 10 categories were used in the pilot). The matches were compared to grades assigned to students at the end of the term.

The cognitive style categories measured by the researchers included:

Theoretical Auditory Linguistics (TAL) - The ability to acquire meaning through the hearing of spoken words.

Theoretical Visual Linguistics (TVL) - The ability to find meaning from the written word.

Theoretical Visual Quantiative (TVQ) - The ability to acquire meaning in terms of written numerical symbols.

Theoretical Auditory Quantitative (TAQ) - The ability to learn in terms of spoken numerical symbols.

Qualitative Auditory (QA) - The ability to learn through the sense of hearing.

Qualitative Olfactory (QO) - The ability to learn through the sense of smell.

Qualitative Savory (QS) - The ability to learn through the sense of taste.

Qualitative Tactile (QT) - The ability to learn through the sense of touch.

Qualitative Visual (QV) - The ability to learn through sight utilization.

Qualitative Proprioceptive (QP) - The ability to utilize particular small muscles to accomplish a specific task (piano playing).

Results

TABLE 1

Physical Education

	N	MATCH	MEAN GRADE	MISMATCH	MEAN GRADE
T A L	30	26	3.2	4	2.9
T A Q		22	3.1	6	2.8
T V L		20	3.2	10	2.6
T V Q		18	3.0	12	2.8
Q A		18	3.2	12	2.7
Q O		22	3.2	8	2.9
Q S		26	3.1	4	3.0
Q F		24	3.2	6	3.0
Q V		28	3.4	2	3.0
Q P		24	3.1	6	2.9

Table II

Health Science

T A L	N 12	MATCH 8	MEAN GRADE 4.0	MISMATCH 4	MEAN GRADE 3.0
T A Q	12	9	4.0	3	3.0
T V L	12	8	4.0	4	3.0
T V Q	12	8	4.0	4	3.0
Q H	12	9	4.0	3	3.0
Q O	12	10	4.0	2	3.0
Q S	12	10	4.0	2	3.0
Q T	12	10	4.0	2	3.0
Q V	12	10	4.0	2	3.0
Q P	12	10	4.0	2	3.0

TABLE III

Health Science II

	A's		B's		C's		D's		F's	
T A L	MATCH	MISMATCH	MATCH	MISMATCH	MATCH	MISMATCH	MATCH	MISMATCH	MATCH	MISMATCH
	5	4	10	10	5			2		9
T A Q	5	4	13	7	4	1		2		9
T V L	9		8	2	2	3		2		9
T V Q	9		5	5	2	3		2		8
Q A		9	4	6	3	2	1	1	3	6
Q O	6	3	3	7	1	4		2	4	5
Q S	4	5	4	6	2	3	1	1	3	6
Q T	4	5	6	4	3	2	2		3	6
Q V	3	6	2	8	1	4	1	1	5	4
Q P	2	7	2	7	2	3		2	3	6

The results supported the investigators' hypotheses that matched cognitive styles between teachers and students resulted in students receiving higher grades.

The researchers suggest additional studies involving cognitive styles whereby students and teachers are matched and/or mismatched to determine if grades are influenced. The authors suggest the use of the process model of cognitive style mapping which yields learning styles as opposed to other instruments that yield predictors. Adapting learning styles to teaching styles, matching or mismatching students to heterogeneous or homogeneous groups or educational media gives a student a better opportunity of achieving success at his/her rate and gives teachers an additional dimension of guarding against the legal entanglements of accountability.